

No.

200600227



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Oklahoma Agricultural Experiment Station (OAES)

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

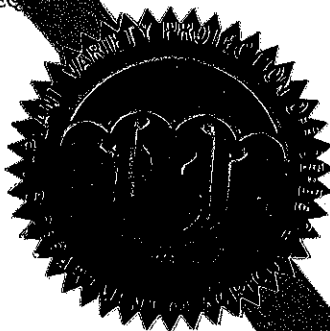
'Okfield'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-ninth day of September, in the year two thousand and six.

Attest:

Ben Zee
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Phil Johnson
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

| | | | |
|---|--|--|---|
| 1. NAME OF OWNER Oklahoma Agricultural Experiment Station (OAES) | | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME OK02909C | 3. VARIETY NAME Okfield |
| 4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Oklahoma State University 139 Ag Hall Stillwater, OK 74078 | | 5. TELEPHONE (include area code) (405) 744-5398 | FOR OFFICIAL USE ONLY PVPO NUMBER 200600227 FILING DATE JUNE 1, 2006 |
| | | 6. FAX (include area code) (405) 744-5269 | |
| 7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Public University | 8. IF INCORPORATED, GIVE STATE OF INCORPORATION | 9. DATE OF INCORPORATION | |
| 10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Dr. Clarence Watson Associate Director--OAES Oklahoma State University 139 Ag Hall Stillwater, OK 74078 | | | F E E S R E C E I V E D FILING AND EXAMINATION FEES: \$ 3652.00 \$ 730.00 DATE 6/1/06 @ 6/14/06 CERTIFICATION FEE: \$ 768.00 DATE 8-17-2006 |
| 11. TELEPHONE (Include area code) (405) 744-5398 | 12. FAX (Include area code) (405) 744-5269 | 13. E-MAIL c.watson@okstate.edu | |
| 14. CROP KIND (Common Name) Hard Red Winter Wheat | 16. FAMILY NAME (Botanical) Poaceae | 18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION. | |
| 15. GENUS AND SPECIES NAME OF CROP Triticum aestivum | 17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | | |
| 19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) | | 20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input type="checkbox"/> NO (If "no", go to item 23) | |
| a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office) | | 21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED | |
| 23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.) | | 22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.) | |
| | | 24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.) | |

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER

Clarence E. Watson

NAME (Please print or type)

Dr. Clarence Watson

SIGNATURE OF OWNER

NAME (Please print or type)

CAPACITY OR TITLE

Associate Director--OAES

DATE

7/27/06

CAPACITY OR TITLE

Associate Director--OAES

DATE

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvindex.htm>

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) evidence of uniformity and stability; and (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

September 16, 2005--Foundation seed sold for increase purposes by the Oklahoma Foundation Seed Service.

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

USA, issued 11/29/1994, patent number 5,369,022

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

OKFIELD-A NEW CLEARFIELD HRWW FOR OKLAHOMA AND THE GREAT PLAINS

EXHIBIT A—ORIGIN AND BREEDING HISTORY

Breeding Procedure

Okfield was tested as OK02909C. It was selected from the single cross, (TXGH12588-120*4/FS4)/2174, and it is an F_2 -derived line currently in the F_9 generation (2005-2006 crop year). The experimental line TXGH12588-120 is a sister line of TAM 110 and originated in the Texas A&M wheat breeding program at Bushland, TX. It served as the recurrent parent in a backcrossing program conducted by scientists at Texas A&M University to introgress the *AhasL-D1* gene from a mutant selection, FS4, of the French wheat cultivar, Fidel. This gene resides on the long arm of chromosome 6D and confers resistance to the imidazolinone herbicide, imazamox, that is absent in wild-type (non-mutated) wheat. Under a material-transfer agreement between Oklahoma State University and American Cyanamid Co., Dr. Tom Peeper acquired F_2 seedstock with the pedigree TXGH12588-120*4/FS4 in the fall of 1996. Single plants were selected in the greenhouse in the seedling stage for survival to a commercial rate ($1x=5$ oz/ac or 0.04 lb ai/ac) of imazamox. Survivor plants were crossed with HBZ374C, a HRW wheat line eventually released by OSU in 1997 as 2174. The F_1 hybrid was produced in 1997 and it traces to a cross between one of the F_2 plants and 2174.

The F_1 plant generation was grown in the greenhouse at Stillwater in 1998. In 1999, the F_2 population was treated with a 2x commercial rate of imazamox, and single heads were harvested from surviving plants. OK02909C traces to a single $F_{2:3}$ head row selected in 2000 on the basis of tolerance to a 2x commercial rate of imazamox, plant and head type, maturity, kernel size and plumpness, and field-sprout tolerance. The $F_{2:4}$ head-row progeny were then evaluated in the 2001 Dual-Purpose Observation Nursery (DPON) using an augmented experimental design at Stillwater and Lahoma. This nursery was treated with imazamox (1x rate), and compared with the untreated check 2174. OK02909C showed a 7 bu/ac yield advantage, larger kernel size, and prolific tillering. From 2002 through 2004, OK02909C was evaluated in the following replicated yield trials, representing 49 site-years in Oklahoma plus additional sites in neighboring states:

| | |
|-------------------------------|-----------|
| Replicated Yield Trials 1 | 2001-2002 |
| Oklahoma Elite Nursery 1 | 2002-2003 |
| Oklahoma Elite Nursery 2 | 2003-2004 |
| BASF Qualification Trials | 2003-2004 |
| Oklahoma Wheat Variety Trials | 2003-2004 |

Dr. Brett Carver has been responsible for the evaluation of OK02909C from 1998 to present. Its end-use quality was externally examined in the 2004 Hard Winter Wheat Milling and Baking Evaluation Program sponsored by the Wheat Quality Council.

The BASF Qualification Trials, conducted according to CLEARFIELD Wheat Variety Qualification Protocol W-21, affirmed the required level of commercial tolerance to imazamox herbicide for commercialization of OK02909C. A restricted release consistent with terms agreed upon by BASF and the Oklahoma Agricultural Experiment Station has been accomplished.

OK02909C was officially released as "Okfield" by the Oklahoma Agricultural Experiment Station and the USDA/ARS in 2005. It is a hard red winter wheat, *Triticum aestivum* L. Foundation seed will be produced and distributed by the Oklahoma Foundation Seed Service, Inc.

Type of variants

Adult plants of Okfield have been observed to be uniform and stable for two generations over a 2-yr period from 2004 to 2005. In the absence of aphid (greenbug) infestation, no phenotypically distinguishable variants or off-types were observed, including reaction to a 1x commercial rate of imazamox. As detailed in Exhibit B, Okfield does contain variants for greenbug reaction. These variants may be identified by seedling assays with either biotype E or I greenbug, which produce a ratio of 50% resistant:50% susceptible plants in response to each biotype. Resistant plants are phenotypically indistinguishable from susceptible plants in the absence of the greenbug, and are thus considered variants of the variety.

Name Check

As customary for all wheat releases by Oklahoma State University until 2006, name clearance was provided as a service of USDA-ARS by Dr. Harold Bockelman prior to variety release by the Okla. Agric. Exp. Stn. Procedures followed by Dr. Bockelman included, but were not restricted to, clearance by the Seed Regulatory and Testing Branch of USDA.

Harold Bockelman wrote:

- > Dear Brett:
- >
- > I have received a reply from the Seed Regulatory & Testing Branch, USDA-
- > Agric. Marketing Service, regarding your name clearance request.
- >
- > They checked with the UPOV-ROM database, the EEC Common Catalog, and their
- > own records and found no conflicts for the use of 'Belief', 'Guymon',
- > 'Okfield', and 'Whitegold' as wheat cultivar names. Available records
- > here at Aberdeen and the GRIN database were also searched and no previous
- > use of these names was found. Because name registration files are not
- > necessarily complete there is no guarantee that the names are totally free
- > of conflicts.
- >

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> These searches did not include trademarks. You can conduct your own
> trademark search online <<http://tess2.uspto.gov>>.

>

> I am pleased to be of assistance.

>

> Best regards,

>

> Harold

>

> \/\ ~~~~~

> \/\ NATIONAL SMALL GRAINS COLLECTION

> \/\ ~~~~~

> \/\ Harold E. Bockelman, PhD, Agronomist & Curator

> \/\ National Small Grains Collection

> \/\ U.S. Department of Agriculture - Agricultural Research Service

> \/\ 1691 S. 2700 W.

> \/\ Aberdeen, Idaho 83210 USA

> \/\ Tel. 208-397-4162 x112

> \/\ Fax. 208-397-4165

> | e-mail nsgchb@ars-grin.gov

> | www.ars.usda.gov/pwa/aberndeen

> | ~~~~~

> | To find accessions in the National Small Grains Collection

> | go to the GRIN database: www.ars-grin.gov/npgs

Exhibit B—STATEMENT OF DISTINCTNESS***Most Similar Varieties***

Okfield most closely resembles the HRW wheat cultivars, AP502CL and 2174. AP502CL is a sister line to one of the two parents used to produce Okfield, and 2174 is the other parent of Okfield. Okfield resembles 2174 in kernel size and texture, and in juvenile plant growth, but lacks its high test weight potential and resistance to wheat soilborne mosaic virus. Okfield resembles AP502CL, not only in its resistance to imazamox herbicide, but also in test weight patterns and susceptibility to wheat soilborne mosaic virus.

Distinctness of Okfield versus AP502CL will be drawn in three key areas: 1) head glume color (chaff color) 2) genotype for high-molecular-weight glutenin subunit (HMW-GS) composition, and 3) capacity to maintain a photosynthetically active canopy through grain filling (stay-green ability).

Distinctness of Okfield versus 2174 will be drawn in four areas: 1) genotype for imazamox herbicide resistance, 2) genotype for greenbug resistance, 3) genotype for HMW-GS composition, and 4) phenotype for test weight potential.

Supportive Data to Declare Distinctness***Okfield versus AP502CL***

1. Chaff color

At harvest maturity, AP502CL exhibits a dark, bronze chaff color (RHS 175A) that is similar to the cultivar 'TAM 110' but darker than the cultivar 'Jagger'. Okfield, in contrast, is classified as "white-chaff" (RHS 158B), being most similar to the cultivar, '2174'.

2. High-molecular-weight glutenin subunit composition

The high-molecular-weight glutenin subunit profile for AP502CL is (in order of A/B/D genome locations) No Glu-A1/7+8/2+12. The absence of a Glu-A1 allele is due to the presence of the 1A/1R chromosome in AP502CL. Likewise, the HMW-GS profile for Okfield is 2*/6+8 and 7+9/5+10 (data provided by Dr. Patricia Rayas, Oklahoma State University, 2006).

3. Stay-green ratings

Okfield maintains a functional and healthy flag leaf longer than most cultivars currently grown in Oklahoma and substantially longer than AP502CL. This stay-green capacity is particularly evident under higher leaf rust (*Puccinia triticina* Eriks.) pressure that forces premature senescence of AP502CL compared with Okfield. Ratings of stay-green were collected at two sites in 2004 and four sites in 2005, where retention of a healthy green flag leaf was challenged to varying degrees primarily by leaf rust or stripe rust (*Puccinia*

striiformis Westend). Although Okfield may show a susceptible reaction type to these diseases, it still maintains a greater area of non-chlorotic tissue on the flag leaf even during periods of severe infection.

Stay-green ratings were made on a 1-to-9 scale, in which 9=flag leaf necrotic, 8=flag leaf severely chlorotic, 7=flag leaf mostly chlorotic, 6=flag leaf partially chlorotic, 5=flag leaf mostly green, 4=flag leaf and penultimate leaf mostly green, 3=flag leaf and two leaves below the flag leaf mostly green, 2=flag leaf and three leaves below the flag leaf mostly green, and 1=completely green canopy. Readings were made during the latter stages of the grain filling period on the dates listed in Table 1. Paired comparisons of Okfield versus AP502CL were extracted from two breeder nurseries in 2004 and four breeder nurseries in 2005 in which complete flag leaf necrosis had already occurred for lines with poor stay-green. Each nursery contained 40 (2004) or 50 (2005) entries, including Okfield and AP502CL. An analysis of variance was conducted within each trial, from which the experimental error variance (estimated by the block x entry mean square) was estimated to compute a two-tailed LSD value. Comparison of two varieties by the LSD, in this case, is equivalent to an *F*-test based on a single degree-of-freedom (df) contrast (Okfield vs. AP502CL).

The paired comparisons revealed a consistent and substantial difference ($P < 0.05$) in each trial. When AP502CL showed partial to severe chlorosis or necrosis of the flag leaf, Okfield usually maintained a mostly green flag leaf or penultimate leaf. This superior stay-green capacity for Okfield, compared with other available Clearfield cultivars, was a principal factor leading to its release.

Okfield versus 2174

1. Genotype for imazamox herbicide resistance

Okfield is homozygous for the *AhasL-D1* gene which confers resistance to a labeled rate of imazamox, which was derived by mutagenesis of the French wheat cultivar, Fidel. 2174 does not contain this gene (wild-type genotype).

2. Genotype for greenbug resistance

2174 contains no genes for greenbug resistance, whereas Okfield possesses the *Gb3* gene which confers resistance to biotypes E and I at a frequency of 50% (i.e., 50% of the plants in Okfield are resistant to both biotypes). Biotypes E and I are the two most predominant biotypes in the southern Great Plains (data provided by Dr. David Porter, USDA-ARS, Stillwater, OK).

3. High-molecular-weight glutenin subunit composition

The high-molecular-weight glutenin subunit profile for 2174 is (in order of A/B/D genome locations) 2*/6+8/5+10 (personal communication, Dr. Robert Graybosch, 2002). Likewise,

the HMW-GS profile for Okfield is 2*/6+8 and 7+9/5+10 (data provided by Dr. Patricia Rayas, Oklahoma State University, 2006).

4. Test weight potential

Development of Clearfield winter wheat cultivars like Okfield and AP502CL, has been challenged by restoring the test weight and milling quality of non-Clearfield cultivars. The non-Clearfield parent, 2174, used to develop Okfield was chosen because, among other agronomic attributes, it has excellent test weight patterns. Okfield falls short in matching the test weight of 2174 in virtually all environments.

To demonstrate that discrepancy, paired comparisons of Okfield and 2174 were extracted from the OSU Wheat Variety Trials conducted statewide in 2005. Data from eight such trials are shown in Table 2, representing the major geographic regions and management systems for wheat production in the state, in which GO and DP represent grain-only and dual-purpose management systems, respectively. Each nursery contained a mean of 20 entries or cultivars, including Okfield and 2174. Grain samples were collected within each of four field replications per trial. An analysis of variance was conducted within each trial, from which the experimental error variance (estimated by the block x entry mean square) was estimated to compute a two-tailed LSD value. Comparison of two varieties by the LSD, in this case, is equivalent to an *F*-test based on a single degree-of-freedom (df) contrast (Okfield vs. 2174).

The paired comparisons showed a consistent difference ($P < 0.05$) in each trial. Across all trials, Okfield's test weight represented a deficit of 2.2 lb/bu relative to 2174, which would be of sufficient magnitude to cause a shift in U.S. grade by as much as two numbers. While Okfield resembles, if not exceeds, 2174 in many agronomic attributes with the added bonus of resistance to imazamox herbicide, it still lacks the superior test weight performance of its non-Clearfield parent.

Other Descriptive Information

Agronomic attributes

Using growth-chamber experiments to predict emergence, Okfield shows strong high-temperature sensitivity similar to 2174, Ok102, and Overlay. This is supported by field observations from early-planted field experiments at Stillwater and Marshall, where Okfield received an average score of 4 on a scale of 1 (accelerated germination) to 5 (delayed germination). This is slightly higher than the score of AP502CL (3) and similar to Overlay and Ok102. Stand establishment will likely be delayed for Okfield when planted extremely early or in hot soils compared with rapidly emerging cultivars such as Jagger and Ok101.

As a juvenile plant, Okfield exhibits an erect to semi-erect fall growth habit and a moderately coarse leaf texture. Based on tissues collected in 2004 at Stillwater, Okfield

reached the first-hollow-stem (FHS) stage 5 d later than AP502CL, 8 d earlier than 2174, and about the same time as Ok101.

Okfield reaches the heading stage 4 d later than AP502CL, a very early cultivar, and two days earlier than the intermediate cultivar, 2174. Plant stature of Okfield, a semidwarf wheat, is moderately tall. Jagger and 2174 are similar in height or slightly shorter, whereas AP502CL is 7 cm shorter. Okfield is moderately susceptible or intermediate in acid-soil tolerance. On a scale of 1 (tolerant) to 5 (highly susceptible) under critically low pH and high aluminum toxicity, Okfield will typically score about 3.5. Scores of other cultivars include 1.5 for Jagger and Ok101, 3.0 for 2174, and 5.0 for Above or AP502CL. This represents an improvement, albeit moderate, over current CL cultivars.

Disease and Insect Reactions

| <u>Disease or insect</u> | <u>Reaction</u> |
|--------------------------------------|---|
| Leaf rust (adult-plant and seedling) | Susceptible |
| Stripe rust (adult plant) | Intermediate |
| Stripe rust (seedling) | Susceptible |
| Stem rust (seedling) | Susceptible |
| Wheat soilborne mosaic | Susceptible |
| Barley yellow dwarf virus | Intermediate (similar to 2174) |
| Septoria leaf blotch | Susceptible |
| Tan spot | Susceptible |
| Powdery mildew (adult) | Resistant |
| Greenbug (biotypes E, I) | Heterogeneous (50% resistant:50% susceptible) |
| Hessian fly (field reaction) | Tolerant |
| Russian wheat aphid (biotypes 1, 2) | Susceptible |

Milling and baking quality

Okfield resembles 2174 in kernel size more than AP502CL. From 2002 to 2004, Okfield averaged 2.40 mm in kernel diameter and 30.3 g for thousand-kernel-weight (TKW). Wheat and flour protein content of Okfield averaged 12.8% and 10.6% across 15 environments in Oklahoma, placing it intermediate to AP502CL (lower) and 2174 (higher). Okfield has a relatively short mixograph mixing time (3-4 min, or about one minute shorter than AP502CL) and intermediate mixing tolerance based on visual ratings, mixogram curve width, and mixogram stability index. Okfield has acceptable baking quality, except crumb grain score is usually below-average for most hard winter wheat cultivars.

Area of adaptation

Okfield is widely adapted to Oklahoma and combines into one cultivar the primary adaptation zones of AP502CL (western Oklahoma) and 2174 (central Oklahoma). The only exception would be areas in north central Oklahoma traditionally challenged by wheat soilborne mosaic virus. With a moderate level of aluminum tolerance, Okfield may struggle under highly acidic soils (pH < 5.0), or the same areas where 2174 has difficulty. Okfield will not only appeal to grain-only producers, but also to dual-purpose producers who place greater emphasis on winter grazing potential and grain production. Forage accumulation in the early fall is average, whereas forage regrowth during the grazing period and recovery

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from grazing are above-average. We do not recommend extremely early seeding of Okfield due to its heat-sensitive germination response

Cooperating scientists

Identification of Okfield as a candidate cultivar was accomplished through OSU's Wheat Improvement Team, which includes Brett Carver (lead scientist), Bob Hunger, Art Klatt, Dave Porter, Jeff Edwards, Patricia Rayas-Duarte, and Bjorn Martin. Special assistance was provided by Tom Peeper in securing the herbicide resistance trait. Also cooperating in the testing of Okfield were breeders throughout the Great Plains associated with the Hard Winter Wheat Performance Nursery Program. They represent state Agricultural Experiment Stations, the USDA-ARS, and private companies. Without their cooperation, this release would not have been possible.

Table 1. Stay-green readings on a 1-to-9 scale for six site-years in Oklahoma.

| | | 2004 Ft. Cobb | 2004 Lahoma | 2005 Ft. Cobb | 2005 Lahoma | 2005 Altus | 2005 El Reno |
|----------------------------|-----------|------------------|----------------|------------------|----------------|---------------|-----------------|
| Okfield | Mean | 4.0 | 5.0 | 4.5 | 6.5 | 4.0 | 3.5 |
| | Min | 4 | 5 | 4 | 6 | 4 | 3 |
| | Max | 4 | 5 | 5 | 7 | 4 | 4 |
| AP502CL | | | | | | | |
| | Mean | 8.5 | 9.0 | 7.0 | 9.0 | 9.0 | 7.0 |
| | Min | 8 | 9 | 7 | 9 | 9 | 7 |
| | Max | 9 | 9 | 7 | 9 | 9 | 7 |
| LSD (0.05) | | 1.2 | 1.0 | 1.0 | 1.1 | 1.3 | 1.2 |
| Absolute difference | | -4.5 | -4.0 | -2.5 | -2.5 | -5.0 | -3.5 |
| Rating date | 5/7/2005 | 5/17/2005 | 5/6/2005 | 5/17/2005 | 5/11/2005 | 5/12/2005 | |
| Sowing date | 10/6/2003 | 10/15/2003 | 10/18/2004 | 10/4/2004 | 10/19/2004 | 9/20/2004 | |
| Harvest date | 6/8/2004 | 6/15/2004 | 6/16/2005 | 6/20/2005 | 6/22/2005 | 6/10/2005 | |

Two paired observations per site-year

LSD determined from complete nursery containing 40 entries in 2004, 50 entries in 2005

Error term for LSD derived from replicate x genotype interaction variance

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Table 2. Test weight comparisons of Okfield vs. 2174 in 8 Oklahoma locations in 2004-2005

| | | Apache | | Apache | | Cherokee | | El Reno | | Gage | | Marshall | | Marshall | |
|--------------|-----------|------------|------------|------------|-----------|-----------|-----------|-----------|------------|------|--|----------|----|----------|----|
| | | Alva | No-Fung | Fung | Fung | | | DP | DP | | | DP | DP | GO | GO |
| Okfield | Mean | 58.9 | 57.0 | 58.1 | 57.8 | 55.8 | 57.2 | 54.5 | 52.4 | | | | | | |
| | Min | 58.8 | 56.4 | 57.6 | 56.7 | 54.3 | 56.8 | 53.5 | 51.3 | | | | | | |
| | Max | 59.1 | 57.5 | 58.6 | 58.4 | 58.8 | 57.8 | 55.3 | 53.8 | | | | | | |
| 2174 | Mean | 61.6 | 59.8 | 60.0 | 59.4 | 58.6 | 59.1 | 56.3 | 55.1 | | | | | | |
| | Min | 60.9 | 59.6 | 59.8 | 58.9 | 56.5 | 57.9 | 55.7 | 54.3 | | | | | | |
| | Max | 62.4 | 59.9 | 60.3 | 59.7 | 60.3 | 60.3 | 57.4 | 56.1 | | | | | | |
| LSD (0.05) | % | 0.9 | 0.5 | 0.4 | 0.5 | 1.8 | 0.8 | 0.7 | 1.0 | | | | | | |
| difference | | 4.4 | 4.7 | 3.2 | 2.7 | 4.8 | 3.2 | 3.2 | 4.9 | | | | | | |
| Sowing date | 9/30/2004 | 10/21/2004 | 10/21/2004 | 10/21/2004 | 9/27/2004 | 9/20/2004 | 9/28/2004 | 8/31/2004 | 10/29/2004 | | | | | | |
| Harvest date | 6/6/2005 | 6/8/2005 | 6/8/2005 | 6/8/2005 | 6/8/2005 | 6/7/2005 | 6/9/2005 | | | | | | | | |

Four paired observations per site-year

LSD determined from complete nursery containing approximately 20 entries

Error term for LSD derived from replicate x variety interaction variance

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 2.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

**U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

Exhibit C

**OBJECTIVE DESCRIPTION OF VARIETY
Wheat (*Triticum* spp.)**

| | | |
|--|---|--|
| NAME OF APPLICANT (S) Oklahoma Agricultural Experiment Station | TEMPORARY OR EXPERIMENTAL DESIGNATION OK02909C | VARIETY NAME Okfield |
| ADDRESS (Street and No. or RD No., City, State, Zip Code and Country) Oklahoma State University 139 Ag Hall Stillwater, OK 74078 Attn: Dr. Robert Westerman | | FOR OFFICIAL USE ONLY PVPO NUMBER 200600227 |

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g., or) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: Royal Horticultural Society ☒. Please answer all questions for your variety; lack of response may delay progress of your application.

| | | | | | | | | | | | | | |
|---|--|--|--------------------------|--|---|-----------------------------|--------|--|---------|----------|---|---------------------------|-----------|
| 1. KIND: <input type="text" value="1"/> 1 = Common 2 = Durum 3 = Club 4 = Other (Specify) _____ | 2. VERNALIZATION: <input type="text" value="2"/> 1 = Spring 2 = Winter 3 = Other (Specify) _____ | | | | | | | | | | | | |
| 3. COLEOPTILE ANTHOCYANIN: <input type="text" value="1"/> 1 = Absent 2 = Present | 4. JUVENILE PLANT GROWTH: <input type="text" value="2"/> 1 = Prostrate 2 = Semi-erect 3 = Erect | | | | | | | | | | | | |
| 5. PLANT COLOR: (boot stage) <input type="text" value="3"/> 1 = Yellow-Green 2 = Green 3 = Blue-Green | 6. FLAG LEAF: (boot stage) <input type="text" value="2"/> 1 = Erect 2 = Recurved <input type="text" value="2"/> 1 = Not Twisted 2 = Twisted <input type="text" value="2"/> 1 = Wax Absent 2 = Wax Present | | | | | | | | | | | | |
| 7. EAR EMERGENCE: <table border="0"> <tr> <td><input type="text" value="1"/> <input type="text" value="1"/> <input type="text" value="8"/></td> <td>Number of Days (Average)</td> <td></td> </tr> <tr> <td><input type="text" value="0"/> <input type="text" value="2"/></td> <td>Number of Days Earlier Than</td> <td>* 2174</td> </tr> <tr> <td></td> <td>Same As</td> <td>* Ok 102</td> </tr> <tr> <td><input type="text" value="0"/> <input type="text" value="4"/></td> <td>Number of Days Later Than</td> <td>* AP502CL</td> </tr> </table> <p align="center">*Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial</p> | | <input type="text" value="1"/> <input type="text" value="1"/> <input type="text" value="8"/> | Number of Days (Average) | | <input type="text" value="0"/> <input type="text" value="2"/> | Number of Days Earlier Than | * 2174 | | Same As | * Ok 102 | <input type="text" value="0"/> <input type="text" value="4"/> | Number of Days Later Than | * AP502CL |
| <input type="text" value="1"/> <input type="text" value="1"/> <input type="text" value="8"/> | Number of Days (Average) | | | | | | | | | | | | |
| <input type="text" value="0"/> <input type="text" value="2"/> | Number of Days Earlier Than | * 2174 | | | | | | | | | | | |
| | Same As | * Ok 102 | | | | | | | | | | | |
| <input type="text" value="0"/> <input type="text" value="4"/> | Number of Days Later Than | * AP502CL | | | | | | | | | | | |
| 8. ANTHOR COLOR: <input type="text" value="1"/> 1 = Yellow 2 = Purple | | | | | | | | | | | | | |

13

9. PLANT HEIGHT: (from soil to top of head, excluding awns)

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0 8 5

cm (Average)

0 4

cm Taller Than AP 502CL *

Same As *

0 7

cm Shorter Than OK Bullet *

10. STEM:

A. ANTHOCYANIN

1

1 = Absent 2 = Present

B. WAXY BLOOM

2

1 = Absent 2 = Present

C. HAIRINESS (last internode of rachis)

1

1 = Absent 2 = Present

D. INTERNODE

1

1 = Hollow 2 = Semi-solid 3 = Solid

5

Number of Nodes

E. PEDUNCLE

1

1 = Erect 2 = Recurved 3 = Semi-erect

3 3

cm Length

F. AURICLE

1

Anthocyanin: 1 = Absent 2 = Present

1

Hair: 1 = Absent 2 = Present

11. HEAD: (At Maturity)

A. DENSITY

2

1 = Lax
2 = Middense (Laxidense)
3 = Dense

B. SHAPE

2

1 = Tapering
2 = Strap
3 = Clavate
4 = Other (Specify) _____

C. CURVATURE

3

1 = Erect
2 = Inclined
3 = Recurved

D. AWNEDNESS

4

1 = Awnless
2 = Apically Awnletted
3 = Awnletted
4 = Awned

12. GLUMES: (At Maturity)

A. COLOR

1

1 = White
2 = Tan
3 = Other (Specify) _____

B. SHOULDER

2

1 = Wanting 2 = Oblique
3 = Rounded 4 = Square
5 = Elevated 6 = Apiculate
7 = Other (Specify) _____

C. SHOULDER WIDTH

2

1 = Narrow
2 = Medium
3 = Wide

D. BEAK

2

1 = Obtuse
2 = Acute
3 = Acuminate

E. BEAK WIDTH

2

1 = Narrow
2 = Medium
3 = Wide

F. GLUME LENGTH

3

1 = Short (ca. 7mm)
2 = Medium (ca. 8mm)
3 = Long (ca. 9mm)

G. WIDTH

3

1 = Narrow (ca. 3mm)
2 = Medium (ca. 3.5mm)
3 = Long (ca. 4mm)

13. SEED:

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A. SHAPE

- ☐ 1 = Ovate
☐ 2 = Oval
☐ 3 = Elliptical

B. CHEEK

- ☐ 1 = Rounded
☐ 2 = Angular

C. BRUSH

- ☐ 1 = Short
☐ 2 = Medium
☐ 3 = Long
- ☐ 1 = Not Collared
☐ 2 = Collared

D. CREASE

- ☐ 2 = 1 = Width 60% or less of Kernel
☐ 2 = Width 80% or less of Kernel
☐ 3 = Width Nearly as Wide as Kernel
- ☐ 2 = 1 = Depth 20% or less of Kernel
☐ 2 = Depth 35% or less of Kernel
☐ 3 = Depth 50% or less of Kernel

E. COLOR

- ☐ 3 = 1 = White
☐ 2 = Amber
☐ 3 = Red
☐ 4 = Other (Specify) _____

F. TEXTURE

- ☐ 1 = 1 = Hard
☐ 2 = Soft
☐ 3 = Other (Specify) _____

G. PHENOL REACTION (See Instructions)

- ☐ 0 = 1 = Ivory
☐ 2 = Fawn
☐ 3 = Light Brown
☐ 4 = Dark Brown
☐ 5 = Black

H. SEED WEIGHT

- ☐ 3 ☐ 0 g/1000 Seed (Whole number only)

I. GERM SIZE

- ☐ 3 = 1 = Small
☐ 2 = Midsize
☐ 3 = Large

14. DISEASE: PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

(0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

- | | |
|---|---|
| <input type="checkbox"/> 1 Stem Rust (<i>Puccinia graminis</i> f. sp. <i>tritici</i>) | <input type="checkbox"/> 1 Leaf Rust (<i>Puccinia recondita</i> f. sp. <i>tritici</i>) |
| <input type="checkbox"/> 3 Stripe Rust (<i>Puccinia striiformis</i>) | <input type="checkbox"/> 0 Loose Smut (<i>Ustilago tritici</i>) |
| <input type="checkbox"/> 1 Tan Spot (<i>Pyrenophora tritici-repentis</i>) | <input type="checkbox"/> 0 Flag Smut (<i>Urocystis agropyri</i>) |
| <input type="checkbox"/> 0 Halo Spot (<i>Selenophoma donacis</i>) | <input type="checkbox"/> 0 Common Bunt (<i>Tilletia tritici</i> or <i>T. laevis</i>) |
| <input type="checkbox"/> 0 <i>Septoria nodorum</i> (Glume Blotch) | <input type="checkbox"/> 0 Dwarf Bunt (<i>Tilletia controversa</i>) |
| <input type="checkbox"/> 0 <i>Septoria avenae</i> (Speckled Leaf Disease) | <input type="checkbox"/> 1 Karnal Bunt (<i>Tilletia indica</i>) |
| <input type="checkbox"/> 1 <i>Septoria tritici</i> (Speckled Leaf Blotch) | <input type="checkbox"/> 2 Powdery Mildew (<i>Erysiphe graminis</i> f. sp. <i>tritici</i>) |
| <input type="checkbox"/> 1 Scab (<i>Fusarium</i> spp.) | <input type="checkbox"/> 0 "Snow Molds" |
| <input type="checkbox"/> 0 "Black Point" (Kernel Smudge) | <input type="checkbox"/> 0 Common Root Rot (<i>Fusarium</i> , <i>Cochliobolus</i> and <i>Bipolaris</i> spp.) |
| <input type="checkbox"/> 3 Barley Yellow Dwarf Virus (BYDV) | <input type="checkbox"/> 0 Rhizoctonia Root Rot (<i>Rhizoctonia solani</i>) |
| <input type="checkbox"/> 1 Soilborne Mosaic Virus (SBMV) | <input type="checkbox"/> 0 Black Chaff (<i>Xanthomonas campestris</i> pv. <i>translucens</i>) |
| <input type="checkbox"/> 1 Wheat Yellow (Spindle Streak) Mosaic Virus | <input type="checkbox"/> 0 Bacterial Leaf Blight (<i>Pseudomonas syringae</i> pv. <i>syringae</i>) |
| <input type="checkbox"/> 0 Wheat Streak Mosaic Virus (WSMV) | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Other (Specify) _____ | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Other (Specify) _____ | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Other (Specify) _____ | <input type="checkbox"/> Other (Specify) _____ |

15. INSECT: (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

- | | |
|--|--|
| <input type="checkbox"/> 4 Hessian Fly (<i>Mayetiola destructor</i>) | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> 0 Stem Sawfly (<i>Cephus</i> spp.) | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> 0 Cereal Leaf Beetle (<i>Oulema melanopa</i>) | <input type="checkbox"/> Other (Specify) _____ |

15. INSECT: (continued) 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant

PLEASE SPECIFY BIOTYPE (Where Needed)

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| | | | |
|---------------------------------------|--|--------------------------|-----------------------|
| <input checked="" type="checkbox"/> 1 | Russian Aphid (<i>Diuraphis noxia</i>) | <input type="checkbox"/> | Other (Specify) _____ |
| <input checked="" type="checkbox"/> 3 | Greenbug (<i>Schizaphis graminum</i>) | <input type="checkbox"/> | Other (Specify) _____ |
| <input type="checkbox"/> 0 | Aphids | <input type="checkbox"/> | Other (Specify) _____ |

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS:

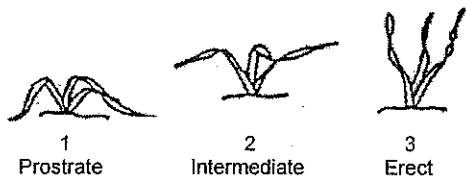
Greenbug resistance is intermediate due to heterogeneity for Biotypes E and I. Variety is 50% resistant and 50% susceptible.

WHEAT DESCRIPTOR ILLUSTRATIONS

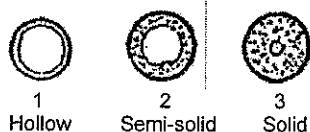
Section Numbers Correspond to the Numbers of the Sections on the Form

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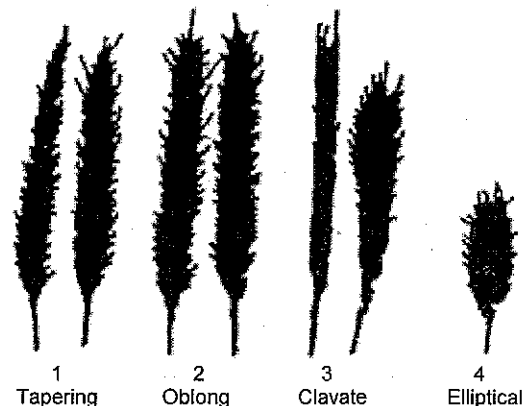
4. EARLY PLANT GROWTH HABIT:



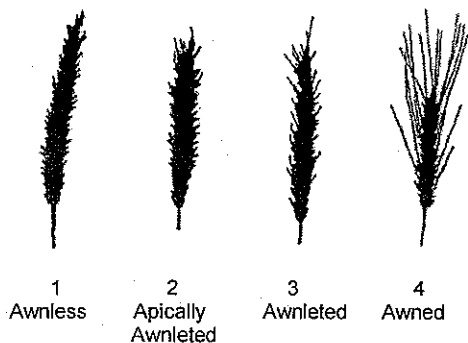
10. STEM INTERNODE X-SECTION:



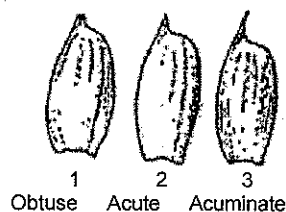
11. SPIKE SHAPE:



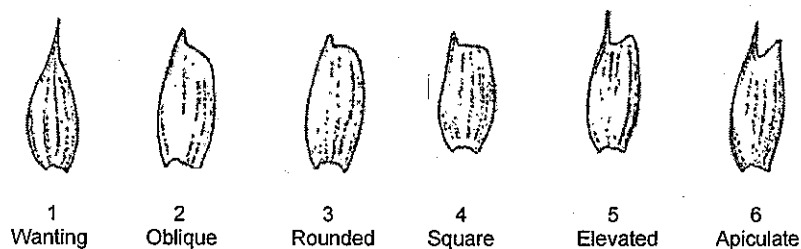
11. AWNEDNESS:



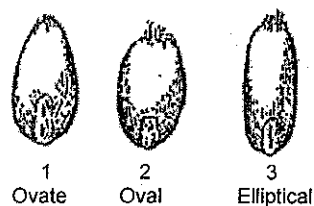
12. BEAK SHAPE:



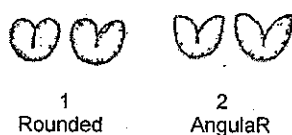
12. SHOULDER SHAPE:



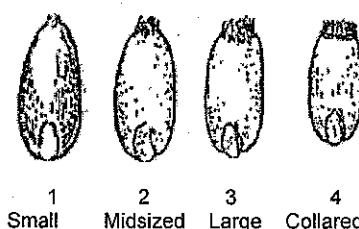
13. SEED SHAPE:



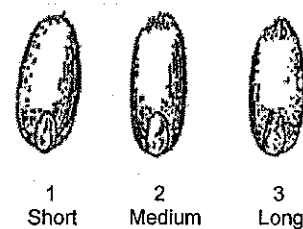
13. CHEEK SHAPE:



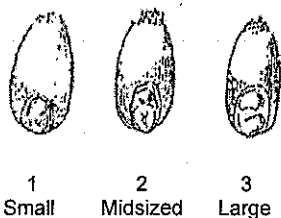
13. BRUSH SIZE



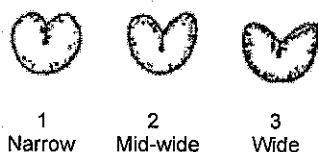
13. BRUSH HAIR LENGTH:



13. GERM (EMBRYO) SIZE:



13. SEED CREASE WIDTH:



13. SEED CREASE DEPTH:



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

| | | |
|---|--|--|
| 1. NAME OF APPLICANT(S) Oklahoma Agricultural Experiment Station (OAES) | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER OK02909C | 3. VARIETY NAME Okfield |
| 4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Oklahoma State University 139 Ag Hall Stillwater, OK 74078 | 5. TELEPHONE (include area code) (405) 744-5398 | 6. FAX (include area code) (405) 744-5269 |
| | 7. PVPO NUMBER 200600227 | |

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.